AMENDMENTS TO THE CLAIMS

This listing of claims replaces all previous versions and listings of claims in this application.

Claim Listing:

1.   (Original) A compressing device, comprising:

delay circuits of several stages for sequentially delaying each sampling data inputted therein in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits, the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

2.   (Original) A compressing device, comprising:

delay circuits of four stages for sequentially delaying each sampling data inputted therein in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits, the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

3.   (Original) The compressing device according to claim 2, wherein the multiplying/adding circuit comprises:

a first multiplying/adding circuit for adding output data from the delay circuits of the second and third stages and then multiplying the added data by 9;

a second multiplying/adding circuit for adding output data from the delay circuits of the first and fourth stages and then multiplying the added data by -1; and

a third multiplying/adding circuit for adding output data from the first multiplying/adding circuit and output data from the second multiplying/adding circuit and then multiplying the added data by 1/16.

4.   (Original) The compressing device according to claim 2, wherein the delay circuits of the four stages and the multiplying/adding circuits are designed as a thinning-out circuit, and in the compressing device, at least two thinning-out circuits are connected so as to have a cascade connection.

5.   (Original) A compressing device, comprising:

delay circuits of seven stages for sequentially delaying each sampling data inputted therein in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits, the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

6.   (Original) The compressing device according to claim 5, wherein the multiplying/adding circuit comprises:

a first multiplying/adding circuit for adding output data from the delay circuits of the first and seventh stages and then multiplying the added data by –1;

a second multiplying/adding circuit for adding output data from the delay circuits of the third and fifth stages and then multiplying the added data by 9;

a multiplying circuit for multiplying output data from the delay circuit of the fourth stage by 16; and

a third multiplying/adding circuit for adding output data from the first multiplying/adding circuit, output data from the second multiplying/adding circuit, and output data from the multiplying circuit, and then multiplying the added data by 1/32.

7.   (Original) The compressing device according to claim 5, wherein the delay circuits of the seven stages and the multiplying/adding circuits are designed as a thinning-out circuit, and in the compressing device, at least two thinning-out circuits are connected so as to have a cascade connection.

8.   (Original) A compressing device, wherein sampling data is sequentially inputted therein as a target of compression, and then weighted addition is performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

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9.   (Original) A compressing device into which sampling data can be inputted in sequence as a target of compression, the device comprising:

thinning-out means for performing weighted addition with respect to the inputted sampling data to produce thinned-out data therefrom, in which the weighted addition is performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function;

sampling point detecting means for detecting a sampling point using the thinned-out data produced by the thinning-out means, in which a sample point, where an error between each data value on a straight line connecting two thinned-out data and a thinned-out data value on the same sample point as that of said data value on the straight line is equal to or smaller than a predetermined value, is detected as the sampling point; and

compression data producing means for producing, in the form of compression data, a pair of discrete amplitude data on each of the detected sampling points and timing data indicating a time interval between the detected sampling points.

10.   (Original) The compressing device according to claim 9, further comprising replacing means for replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value,

wherein through the replacing means the inputted sampling data is fed to the thinning-out means.

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11.   (Original) The compressing device according to claim 9, further comprising replacing means for rounding by a predetermined value an absolute value of the sampling data inputted as a target of compression, as well as for performing a data replacement process,

wherein in the data replacement process, the replacing means replaces sampling data with zero data, in which among the sampling data inputted as a target of compression, the sampling data to be replaced has absolute value smaller than a predetermined value, and

wherein through the replacing means the inputted sampling data is fed to the thinning-out means.

12.   (Original) The compressing device according to claim 9, further comprising rounding means for rounding lower-order bits of amplitude data on each of the sampling points detected by the sampling point detecting means,

wherein the compression data producing means produces, in the form of the compression data, a pair of the rounded amplitude data on each of the detected sampling points and timing data indicating a time interval between the detected sampling points.

13.   (Original) The compressing device according to claim 12, wherein the rounding operation by the rounding means is performed according to an operation in which data values before and after the rounding operation have a non-linear relationship.

14.   (Original) The compressing device according to claim 13, wherein the operation having the non-linear relationship is an operation based on a logarithmic function or a function approximated thereto.

15.   (Original) A compressing device, into which sampling data can be successively inputted as a target of compression, the device comprising:

replacing means for replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value; and

thinning-out means for performing weighted addition with respect to the sampling data sequentially inputted therein from the replacing means, in which the weighted addition is performed sampling data on a target sample point and sampling data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sampling data.

16.   (Original) The compressing device according to claim 15, further comprising rounding means for rounding a lower-order bit of the thinned-out data produced by the thinning-out means.

17.   (Original) The compressing device according to claim 16, wherein the rounding operation by the rounding means is performed according to an operation in which data values before and after the rounding operation have a non-linear relationship.

18.   (Original) The compressing device according to claim 17, further comprising zero compressing means for performing a zero compressing process with respect to the thinned-out data outputted from the rounding means,

wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted from the rounding means, and

wherein in the zero compressing process, a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then the thinned-out data including a replacement result is outputted from the zero compressing means.

19.   (Original) A compressing device, into which sampling data can be inputted in sequence as a target of compression, the device comprising:

thinning-out means for performing weighted addition with respect to the inputted sampling data to produce thinned-out data therefrom, in which the weighted addition is performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function; and

rounding means for rounding a lower-order bit of the produced thinned-out data.

20.   (Original) The compressing device according to claim 19, wherein the rounding operation by the rounding means is performed according to an operation in which data values before and after the rounding operation have a non-linear relationship.

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21.   (Original) The compressing device according to claim 20, further comprising zero compressing means for performing a zero compressing process with respect to the thinned-out data outputted from the rounding means,

wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted from the rounding means; and

wherein in the zero compressing process, a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then the thinned-out data including a replacement result is outputted from the zero compressing means.

22.   (Original) A compressing device, into which sampling data can be successively inputted as a target of compression, the device comprising:

replacing means for replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value;

rounding means for performing a rounding operation on the sampling data outputted from the replacing means to round lower-order bits thereof, the rounding operation being performed according to an operation in which data values before and after the rounding operation have a non-linear relationship; and

zero compressing means for performing a zero compressing process with respect to the sampling data outputted from the rounding means, wherein the zero compressing process

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is performed when a predetermined number or more of data having absolute values of zero are successively outputted from the rounding means, and wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then data including a replacement result is outputted from the zero compressing means.

23.   (Original) A compressing device, into which sampling data can be successively inputted as a target of compression, the device comprising:

rounding means for performing a rounding operation on the successively inputted sampling data to round lower-order bits thereof, the rounding operation being performed according to an operation in which data values before and after the rounding operation have a non-linear relationship; and

zero compressing means for performing a zero compressing process with respect to the sampling data outputted from the rounding means, wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted from the rounding means, and wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then data including a replacement result is outputted from the zero compressing means.

24.   (Original) A compressing method, comprising the steps of:

sequentially inputting sampling data as a target of compression; and

performing weighted addition with respect to the inputted sampling data, the weighted addition being performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, and the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

25.   (Original) The compressing method according to claim 24, wherein the digital basic function is a function having a data value changing to -1, 1, 8, 8, 1, and -1 on each clock.

26.   (Original) The compressing method according to claim 24, wherein the digital basic function is a function having a data value changing to -1, 0, 9, 16, 9, 0, and -1 on each clock, the function being produced by shifting the digital basic function in claim 25 by one clock and then adding the digital basic functions before and after the shift.

27.   (Original) The compressing method according to claim 24, wherein when sampling data on four successive sample points are denoted by A, B, C and D, respectively, in the weighted addition two sampling data B and C on target sample points are replaced with one thinned-out data according to an operation of $(9(B + C) - (A + D))/16$, and the same operation is sequentially performed while the target sample points where two sampling data are to be replaced are shifted by two sample points.

28.   (Original) The compressing method according to claim 24, wherein when sampling data on seven successive sample points are denoted by A, B, C, D, E, F, and G,

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respectively, in the weighted addition the sampling data D on a target sample point is replaced with one thinned-out data according to an operation of $(16D + 9(C + E) - (A + G))/32$, and the same operation is sequentially performed while the target sample point is shifted by two sample points.

29.   (Original) The compressing method according to claim 24, further comprising the step of further performing weighted addition with respect to the thinned-out data already produced through the first weighted addition, in which the second weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the second weighted addition being performed according to a value of the digital basic function.

30.   (Original) A compressing method, comprising the steps of:

sequentially inputting sampling data as a target of compression;

performing weighted addition with respect to the inputted sampling data, the weighted addition being performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, and the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data;

determining a sampling point using the produced thinned-out data, in which a sample point, where a difference value between each data value on a straight line connecting two thinned-out data and a thinned-out data value on the same sample point as that of said data value on the straight line is equal to or smaller than a predetermined value, is detected as the sampling point; and

producing, in the form of compression data, a pair of discrete amplitude data on each of the detected sampling points and timing data indicating a time interval between the detected sampling points.

31.   (Original) The compressing method according to claim 30, further comprising the step of replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value,

wherein the weighted addition being performed on data subjected to the data replacement.

32.   (Original) The compressing method according to claim 30, further comprising the step of rounding lower-order bits of amplitude data on each of the detected sampling points,

wherein in the compression data producing step, a pair of the rounded amplitude data on each of the detected sampling points and timing data indicating a time interval between the detected sampling points is produced in the form of said compression data.

33.   (Original) A compressing method, comprising the steps of:

sequentially inputting sampling data as a target of compression;

replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value; and

performing weighted addition with respect to the successive sampling data subjected to the data replacement process, the weighted addition being performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, and the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data.

34.   (Original) The compressing method according to claim 33, further comprising the step of rounding a lower-order bit of the thinned-out data produced by the weighted addition step.

35.   (Original) The compressing method according to claim 34, wherein the rounding operation step is performed according to an operation in which data values before and after the rounding operation have a non-linear relationship.

36.   (Original) The compressing method according to claim 35, further comprising the step of performing a zero compressing process with respect to the thinned-out data subjected to the rounding operation,

wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted in the rounding operation; and

wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then the thinned-out data including a replacement result is outputted.

37.   (Original) A compressing method, comprising the steps of:

sequentially inputting sampling data as a target of compression;

performing weighted addition with respect to the sampling data successively inputted as a target of compression, the weighted addition being performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, and the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data; and

rounding a lower-order bit of the thinned-out data produced by the weighted addition.

38.   (Original) The compressing method according to claim 37, wherein the rounding operation step is performed according to an operation in which data values before and after the rounding operation have a non-linear relationship.

39.   (Original) The compressing method according to claim 38, further comprising the step of performing a zero compressing process with respect to the thinned-out data subjected to the rounding operation,

wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted in the rounding operation, and

wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then the thinned-out data including a replacement result is outputted.

40.   (Previously Presented) A compressing method, comprising the steps of:

sequentially inputting sampling data as a target of compression;

replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value;

rounding a lower-order bit of the sampling data subjected to the data replacement process, the rounding operation step being performed according to an operation in which data values before and after the rounding operation have a non-linear relationship; and

performing a zero compressing process with respect to the sampling data subjected to the rounding operation, wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted in the rounding operation, and wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then data including a replacement result is outputted.

41.   (Original) A compressing method, comprising the steps of:

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sequentially inputting sampling data as a target of compression;

rounding a lower-order bit of the discrete sampling data successively inputted, the rounding operation being performed according to an operation in which data values before and after the rounding operation have a non-linear relationship; and

performing a zero compressing process with respect to the sampling data subjected to the rounding operation, wherein the zero compressing process is performed when a predetermined number or more of data having absolute values of zero are successively outputted in the rounding operation, and wherein in the zero compressing process a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating the number of successive zero data, and then data including a replacement result is outputted.

42.   (Original) A compressing program, which makes a computer to function as each means in claim 9.

43.   (Original) A compressing program, which makes a computer to function as each means in claim 15.

44.   (Original) A compressing program, which makes a computer to function as each means in claim 19.

45.   (Original) A compressing program, which makes a computer to function as each means in claim 22.

46.   (Original) A compressing program, which makes a computer to function as each means in claim 23.

47.   (Original) A compressing program, which makes a computer to perform the steps of the compressing method claimed in claim 24.

48.   (Original) A record medium readable by a computer, on which a program for making the computer to function as each means in claim 9 is recorded.

49.   (Original) A record medium readable by a computer, on which a program for making the computer to execute each of the steps of the compressing method claimed in claim 24 is recorded.

50.   (Original) A decompressing device, comprising:

delay circuits of several stages into which discrete thinned-out data produced by a compressing device claimed in claim 1 can be inputted, each of the delay circuits delaying the inputted thinned-out data in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits, the weighted addition being performed according to a value of a digital basic function, whereby interpolation data for the thinned-out data is produced.

51.   (Original) The decompressing device according to claim 50, wherein the delay circuits and the multiplying/adding circuit are designed as an oversampling circuit, and in the decompressing device, at least two oversampling circuits are connected so as to have a cascade connection.

52.   (Original) A decompressing device, comprising:

delay circuits of three stages into which discrete thinned-out data produced by a compressing device claimed in claim 2 can be inputted, each of the delay circuits delaying the inputted thinned-out data in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits, the weighted addition being performed according to a value of a digital basic function, whereby interpolation data for the thinned-out data is produced

53.   (Original) The decompressing device according to claim 52, wherein the multiplying/adding circuit comprises:

a first multiplier for multiplying output data from the delay circuit of the first stage by -1;

a second multiplier for multiplying output data from the delay circuit of the second stage by 8;

a third multiplier for multiplying output data from the delay circuit of the third stage by -1;

a first switching circuit for selectively outputting any one of data from the delay circuit of the first stage and data from the first multiplier;

a second switching circuit for selectively outputting any one of data from the delay circuit of the third stage and data from the third multiplier; and

an adder for adding output data from the second multiplier, output data from the first switching circuit, and output data from the second switching circuit.

54.   (Original) The decompressing device according to claim 52, wherein the multiplying/adding circuit comprises:

a first multiplying/adding circuit which includes

a first multiplier for multiplying output data from the delay circuit of the first stage by -1;

a second multiplier for multiplying output data from the delay circuit of the second stage by 8; and

an adder for adding output data from the first multiplier, output data from the second multiplier, and output data from the delay circuit of the third stage;

a second multiplying/adding circuit which includes

a third multiplier for multiplying output data from the delay circuit of the second stage by 8;

a fourth multiplier for multiplying output data from the delay circuit of the third stage by -1; and

an adder for adding output data from the third multiplier, output data from the fourth multiplier, and output data from the delay circuit of the first stage; and

a switching circuit for selectively outputting any one of data from the first multiplying/adding circuit and data from the second multiplying/adding circuit.

55.   (Original) The decompressing device according to claim 52, wherein the multiplying/adding circuit comprises:

a first multiplier for multiplying output data from the delay circuit of the first stage by –1;

a second multiplier for multiplying output data from the delay circuit of the second stage by 8;

a third multiplier for multiplying output data from the delay circuit of the third stage by –1;

a first adder for adding output data from the first multiplier, output data from the second multiplier, and output data from the delay circuit of the third stage;

a second adder for adding output data from the second multiplier, output data from the third multiplier, and output data from the delay circuit of the first stage; and

a switching circuit for selectively outputting any one of data from the first adder and data from the second adder.

56.   (Original) The decompressing device according to claim 52, wherein the delay circuits of the three stages and the multiplying/adding circuit are designed as an oversampling circuit, and in the decompressing device at least two oversampling circuits are connected so as to have a cascade connection.

57.   (Original) A decompressing device, comprising:

delay circuits of several stages into which discrete thinned-out data produced by a compressing device claimed in claim 1 can be inputted, each of the delay circuits delaying the inputted thinned-out data in sequence;

a multiplying/adding circuit for performing weighted addition on the discrete thinned-out data outputted from each of the delay circuits to produce interpolation data for the thinned-out data, the weighted addition being performed according to a value of a digital basic function; and

an averaging circuit for producing average data of adjacent interpolation data values outputted from the multiplying/adding circuit.

58.   (Original) The decompressing device according to claim 57, wherein the delay circuits of the several stages and the multiplying/adding circuit are designed as an oversampling circuit, and in the decompressing device at least two oversampling circuits are connected so as to have a cascade connection.

59.   (Original) A decompressing device, comprising:

delay circuits of four stages into which discrete thinned-out data produced by a compressing device claimed in claim 2 can be inputted, each of the delay circuits delaying the inputted thinned-out data in sequence; and

a multiplying/adding circuit for performing weighted addition on data outputted from each of the delay circuits to produce interpolation data for the thinned-out data, the weighted addition being performed according to a value of a digital basic function.

60.   (Original) The decompressing device according to claim 59, wherein the multiplying/adding circuit comprises:

a first multiplier for multiplying output data from the delay circuit of the first stage by -1;

a second multiplier for multiplying output data from the delay circuit of the second stage by 9;

a third multiplier for multiplying output data from the delay circuit of the third stage by 9;

a fourth multiplier for multiplying output data from the delay circuit of the fourth stage by -1;

an adder for adding output data from the first to fourth multipliers; and

a switching circuit for selectively outputting any one of data from the adder and the thinned-out data to be inputted into the delay circuit of the first stage.

61.   (Original) The decompressing device according to claim 59, wherein the multiplying/adding circuit comprises:

a first adder for adding output data from the delay circuit of the first stage and output data from the delay circuit of the fourth stage;

a second adder for adding output data from the delay circuit of the second stage and output data from the delay circuit of the third stage;

a first multiplier for multiplying output data from the first adder by -1;

a second multiplier for multiplying output data from the second adder by 9;

a third adder for adding output data from the first adder and output data from the second adder; and

a switching circuit for selectively outputting any one of data from the third adder and the thinned-out data to be inputted into the delay circuit of the first stage.

62.   (Original) The decompressing device according to claim 59, wherein the delay circuits of the four stages and the multiplying/adding circuit are designed as an oversampling circuit, and in the decompressing device at least two oversampling circuits are connected so as to have a cascade connection.

63.   (Original) A decompressing device, comprising:

delay circuits of five stages into which discrete thinned-out data produced by a compressing device claimed in claim 5 can be inputted, each of the delay circuits delaying the inputted thinned-out data in sequence; and

a multiplying/adding circuit for performing weighted addition on the thinned out data outputted from each of the delay circuits to produce interpolation data for the thinned-out data, the weighted addition being performed according to a value of a digital basic function.

64.   (Original) The decompressing device according to claim 63, wherein the multiplying/adding circuit comprises:

a first multiplying/adding circuit which includes

a first multiplier for multiplying output data from the delay circuit of the first stage by –1;

a second multiplier for multiplying output data from the delay circuit of the second stage by 9;

a third multiplier for multiplying output data from the delay circuit of the third stage by 25;

a fourth multiplier for multiplying output data from the delay circuit of the fourth stage by –1; and

an adder for adding output data from the first to fourth multipliers;

a second multiplying/adding circuit which includes

a fifth multiplier for multiplying output data from the delay circuit of the second stage by –1;

a sixth multiplier for multiplying output data from the delay circuit of the fourth stage by 9;

a seventh multiplier for multiplying output data from the delay circuit of the fifth stage by –1; and

an adder for adding output data from the third multiplier and the fifth to seventh multipliers; and

a switching circuit for selectively outputting any one of data from the first multiplying/adding circuit and data from the second multiplying/adding circuit.

65.   (Original) A decompressing device, wherein thinned-out data is inputted therein sequentially, and then interpolation data for the thinned-out data inputted sequentially is produced by performing weighted addition on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, in which the weighted addition is performed according to a value of a digital basic function.

66.   (Original) A decompressing device, comprising:

first interpolating means for performing an interpolation process with respect to thinned-out data produced by a compressing device claimed in claim 9, in which in the interpolation process, timing data and amplitude data on each sampling point are used to produce first interpolation data for interpolating between one amplitude data and the other amplitude data which have a time interval indicated by the timing data; and

second interpolating means for producing second interpolation data for the produced first interpolation data by performing a further interpolation process with respect to the produced first interpolation data, in which in the further interpolation process, weighted addition is performed on interpolation data on a target sample point and interpolation data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

67.   (Original) A decompressing device, comprising:

inverse rounding means for performing an inverse rounding operation on amplitude data on each sampling point in compression data produced by a compressing device claimed in claim 12, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compression device;

first interpolating means for performing an interpolation process using both of timing data in the compression data and the amplitude data outputted from the inverse rounding means, in which through the interpolation process the first interpolation means produces first interpolation data for interpolating between one amplitude data and the other amplitude data which have a time interval indicated by the timing data; and

second interpolating means for producing second interpolation data for the produced first interpolation data by performing weighted addition with respect to the produced first interpolation data, in which the weighted addition is performed on first interpolation data on a target sample point and first interpolation data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

68.   (Original) The decompressing device according to claim 67, wherein the operation reversed from the rounding operation is performed according to an operation in which data values before and after the inverse rounding operation have a non-linear relationship.

69.   (Original) The decompressing device according to claim 68, wherein the operation having the non-linear relationship is an operation based on an exponential function or a function approximated thereto.

70.   (Original) A decompressing device, comprising interpolating means for performing an interpolation process with respect to discrete thinned-out data produced by a compressing device claimed in claim 15 to produce interpolation data for the discrete thinned-out data,

wherein in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

71.   (Original) A decompressing device, comprising:

inverse rounding means for performing an inverse rounding operation on discrete thinned-out data produced through a rounding operation by a compressing device claimed in claim 16, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during the compression by the compression device; and

interpolating means for performing an interpolation process with respect to the discrete thinned-out data outputted from the inverse rounding means to produce interpolation data for the discrete thinned-out data, wherein in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

72.   (Original) A decompressing device, comprising:

inverse rounding means for performing an inverse rounding operation on discrete thinned-out data produced through a rounding operation by a compressing device claimed in claim 19, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compression device; and

interpolating means for performing an interpolation process with respect to the discrete thinned-out data outputted from the inverse rounding means to produce interpolation data for the discrete thinned-out data, wherein in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

73.   (Original) A decompressing device, comprising:

zero decompressing means for performing a zero decompressing process with respect to thinned-out data produced by a compressing device claimed in claim 18, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process;

inverse rounding means for performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced by the zero decompressing means, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compressing device; and

interpolating means for performing an interpolation process with respect to the discrete thinned-out data outputted from the inverse rounding means to produce interpolation data for said discrete thinned-out data, in which in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

74.   (Original) A decompressing device, comprising:

zero decompressing means for performing a zero decompressing process with respect to thinned-out data produced by a compressing device claimed in claim 21, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process;

inverse rounding means for performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced by the zero decompressing means, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compressing device; and

interpolating means for performing an interpolation process with respect to the discrete thinned-out data outputted from the inverse rounding means to produce interpolation data for said discrete thinned-out data, in which in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample

points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

75.   (Original) A decompressing device, comprising:

zero decompressing means for performing a zero decompressing process with respect to thinned-out data produced by a compressing device claimed in claim 22, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process; and

inverse rounding means for performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced by the zero decompressing means, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compressing device.

76.   (Original) A decompressing device, comprising:

zero decompressing means for performing a zero decompressing process with respect to thinned-out data produced by a compressing device claimed in claim 23, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process; and

inverse rounding means for performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced by the zero decompressing means, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compressing device.

77.   (Original) A decompressing method, comprising the steps of:

successively inputting thinned-out data produced by a compressing method claimed in claim 24; and

performing an interpolation process with respect to the inputted discrete thinned-out data to produce interpolation data for said discrete thinned-out data, in which in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

78.   (Original) The decompressing method according to claim 77, wherein each discrete thinned-out data is replaced with two interpolation data each of which has been produced by the weighted addition according to a value of the digital basic function.

79.   (Original) The decompressing method according to claim 78, further comprising the step of performing an averaging operation with respect to the interpolation data produced through the weighted addition,

wherein the averaging operation is performed on adjacent discrete interpolation data.

80.   (Original) The decompressing method according to claim 77, wherein another weighted addition is further performed with respect to the interpolation data already produced through the weighted addition, in which said further weighted addition is performed on interpolation data on a target sample point and interpolation data on several sample points around said target sample point, the further weighted addition being performed according to a value of

the digital basic function, whereby further interpolation data for the already produced interpolation data on said target sample point is produced.

81.   (Previously presented) A decompressing method, comprising the steps of:

performing a first interpolation process with respect to compression data produced by a compressing method claimed in claim 30, in which in the first interpolation process, timing data and amplitude data on each sampling point are used to produce first interpolation data for interpolating between one amplitude data and the other amplitude data which have a time interval indicated by the timing data; and

performing a second interpolation process with respect to the produced first interpolation data to produce second interpolation data for the produced first interpolation data, in which another weighted addition is performed on interpolation data on a target sample point and interpolation data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

82.   (Original) A decompressing method, comprising the steps of:

performing an inverse rounding operation on amplitude data on each sampling point in compression data produced by a compressing method claimed in claim 32, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compressing method;

performing a first interpolation process using both of the amplitude data successively subjected to the inverse rounding operation and timing data in the compression data, in which through the first interpolation process, first interpolation data for interpolating between

one amplitude data and the other amplitude data which have a time interval indicated by the

timing data is produced; and

     performing a second interpolations process with respect to the produced first

interpolation data, in which in the second interpolation process, weighted addition is performed

on first interpolation data on a target sample point and first interpolation data on several sample

points around said target sample point, the weighted addition being performed according to a

value of a digital basic function, whereby second interpolation data for the produced first

interpolation is produced through the second interpolation process.

     83.   (Original) The decompressing method according to claim 82, the operation

reversed from the rounding operation is performed according to an operation in which data

values before and after the inverse rounding operation have a non-linear relationship.

     84.   (Original) A decompressing method, in which weighted addition is performed

with respect to discrete thinned-out data produced by a compressing method claimed in claim 33,

     wherein the weighted addition is performed on thinned-out data on a target

sample point and thinned-out data on several sample points around said target sample point to

produce interpolation data for the discrete thinned-out data, the weighted addition being

performed according to a value of a digital basic function.

     85.   (Original) A decompressing method, comprising the steps of:

     performing an inverse rounding operation on discrete thinned-out data produced

through a rounding operation by a compressing method claimed in claim 34, the inverse

rounding operation being performed in a manner reversed from a rounding operation performed during compression by the compression device; and

performing an interpolation process with respect to the discrete thinned-out data subjected to the inverse rounding operation to produce interpolation data for the discrete thinned-out data, wherein in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

86.   (Original) A decompressing method, comprising the steps of:

performing an inverse rounding operation on discrete thinned-out data produced through a rounding operation by a compressing method claimed in claim 37, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during the compression by the compression device; and

performing an interpolation process with respect to the discrete thinned-out data subjected to the inverse rounding operation to produce interpolation data for the discrete thinned-out data, wherein in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

87.   (Original) A decompressing method, comprising the steps of:

performing a zero decompressing process with respect to thinned-out data produced by a compressing method claimed in claim 36, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process;

performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced through the zero decompressing step, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during the compression; and

performing an interpolation process with respect to the discrete thinned-out data subjected to the inverse rounding operation to produce interpolation data for said discrete thinned-out data, in which in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

88.   (Original) A decompressing method, comprising the steps of:

performing a zero decompressing process with respect to thinned-out data produced by a compressing method claimed in claim 39, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process;

performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced in the zero decompressing step, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during the compression; and

performing an interpolation process with respect to the discrete thinned-out data subjected to the inverse rounding step to produce interpolation data for said discrete thinned-out data, in which in the interpolation process, weighted addition is performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, the weighted addition being performed according to a value of a digital basic function.

89.   (Original) A decompressing method, comprising the steps of:

performing a zero decompressing process with respect to thinned-out data produced by a compressing method claimed in claim 40, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process; and

performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced in the zero decompressing step, the inverse rounding operation being performed in a manner reversed from a rounding operation performed during the compression.

90.   (Original) A decompressing method, comprising the steps of:

performing a zero decompressing process with respect to thinned-out data produced by a compressing method claimed in claim 41, in which when a -0 value is detected in the thinned-out data, a corresponding number of successive zero data are reproduced through the zero decompressing process; and

performing an inverse rounding operation on the discrete thinned-out data including the zero data reproduced in the zero decompressing step, the inverse rounding

operation being performed in a manner reversed from a rounding operation performed during the compression.

91.   (Original) A decompressing program, which makes a computer to function as each means in claim 66.

92.   (Original) A decompressing program, which makes a computer to function as each means in claim 67.

93.   (Original) A decompressing program, which makes a computer to function as each means in claim 70.

94.   (Original) A decompressing program, which makes a computer to function as each means in claim 71.

95.   (Original) A decompressing program, which makes a computer to function as each means in claim 72.

96.   (Original) A decompressing program, which makes a computer to function as each means in claim 73.

97.   (Original) A decompressing program, which makes a computer to function as each means in claim 74.

98.   (Original) A decompressing program, which makes a computer to function as each means in claim 75.

99.   (Original) A decompressing program, which makes a computer to function as each means in claim 76.

100.   (Original) A decompressing program, which makes a computer to execute each of the steps of a decompressing method claimed in claim 77.

101.   (Original) A record medium readable by a computer, on which a program for making the computer to function as each means in claim 66 is recorded.

102.   (Original) A record medium readable by a computer, on which a program for making the computer to execute each of the steps of a decompressing method claimed in claim 77 is recorded.

103.   (Original) A compressing/decompressing system, comprising:

a compression part into which sampling data can be sequentially inputted as a target of compression to perform a compression process on the sampling data, the compression process comprising the steps of:

sequentially inputting the sampling data therein; and

performing weighted addition with respect to the inputted sampling data, the weighted addition being performed on sampling data on a target sample point and sampling data on several sample points around said target sample point, and the weighted addition being performed according to a value of a digital basic function, whereby thinned-out data is produced from the sequentially inputted sampling data; and

a decompression part into which said thinned-out data can be inputted in sequence to perform a decompression process on the thinned-out data, the decompression process comprising the steps of:

sequentially inputting the thinned-out data therein; and

performing weighted addition with respect to the sequentially inputted thinned-out data, the weighted addition being performed on thinned-out data on a target sample point and thinned-out data on several sample points around said target sample point, and the weighted addition being performed according to a value of the digital basic function, whereby interpolation data for the sequentially inputted thinned-out data is produced.

104.   (Original) The compressing/decompressing system according to claim 103,

wherein the compression process further comprises the step of replacing sampling data with zero data, in which among the discrete sampling data successively inputted as a target

of compression, the sampling data to be replaced has an absolute value smaller than a predetermined value; and

wherein the weighted addition is performed on the sampling data subjected to the data replacement process.

105.   (Original) The compressing/decompressing system according to claim 103,

wherein the compression process further comprises the step of performing a rounding operation to round a lower-order bit of the produced thinned-out data;

wherein the decompression process further comprises the step of performing an inverse rounding operation on the sequentially inputted thinned-out data in a manner reversed from the rounding operation; and

wherein the weighted addition is performed on the thinned-out data subjected to the inverse rounding operation.

106.   (Original) The compressing/decompressing system according to claim 105,

wherein the rounding operation by the compression part is an operation in which data values before and after the rounding operation have a non-linear relationship; and

wherein the compression process further comprises the step of performing a data replacement process with respect to the thinned-out data produced through the rounding operation, in which in the replacement process, when a predetermined number or more of data having absolute values of zero are outputted in the rounding operation, a set of said predetermined number of zero data is replaced with a pair of a value of -0 and a value indicating

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the number of successive zero, and then the thinned-out data including a replacement result is

outputted from the compression part.

107.   (Cancelled)